

## **REMARKS**

Claims 1, 5-8, 12, 37 and 50-65 are pending in the application. Claims 2, 4 and 11 are cancelled from the application without prejudice. Claims 17 and 62 are withdrawn from the application in view of the examiner's further restriction requirement. However, the applicants hereby traverse the restriction requirement as set forth in Section II below. All pending application claims are amended above in order to either more clearly support what the applicants regard as the invention or to correct claim informalities. New claims 63-65 are also added to the application above. No new matter is added to the application by way of these claim amendments.

The examiner's specification and claim objections and rejections are overcome or they are traversed as set forth below.

### **I. THE INFORMATION DISCLOSURE STATEMENT**

The examiner did not consider certain references in the IDS submitted by the Applicant on May 4, 2005 because the examiner claims there was no concise explanation of the relevancy of the references.

The Applicant submitted a Concise Statement of the Relevancy of Foreign Language References with the IDS filed in this case on May 4, 2005 and the concise Statement is part of PAIR record for this case. Attached to this Reply at Appendix A is a copy of the May 4, 2005 IDS including the Concise Statement downloaded from PAIR records for this case. The examiner is, therefore, asked to consider the foreign language references discussed in the Concise Statement filed on May 4, 2005 and initial the Applicant's IDS accordingly.

### **II. THE ELECTION/RESTRICTION**

The examiner withdrew claims 17 and 62 from consideration allegedly because they are directed to inventions that are independent or distinct from the invention originally claimed. The examiner's removal of claims 17 and 62 from consideration is hereby traversed.

The examiner is reminded that this application is a national phase application claiming priority to a PCT application. Therefore, any claim restriction must be based upon unity of invention principals. Claims 17 and 62 both depend upon claim 1. Therefore claims 17 and 62 have all of the special technical features of claim 1 in common. For at least this reason, there is

unity of invention between claims 1, 17 and 62 and the Applicants ask the examiner consider claims 17 and 62 as part of the present application.

In the alternative, the applicants reserve the right to reinstate claims 17 and 62 into the application should the examiner find independent claim 1 allowable.

### **III. THE DRAWINGS**

The examiner objected to the drawings because they do not show every feature of the invention specified in the claims. In particular, it is the examiner's opinion that the annulus comprised of a solid ring in a plurality of windings of claim 2, a cutting means of claims 6-8 and 51 and a heater of claims 11 and 52 must be shown in the figures or the features cancelled from the claims. The specification and drawings as filed are sufficient to disclose every feature of the invention and, therefore, the Applicant traverses the examiner's requirement to provide amended drawings.

The examiner's drawing rejection with respect to claims 2 and 11 are moot as those claims have been cancelled from the application. New claim 65, which is directed to an annulus that is a solid ring of shape memory alloy, has been added to the application. All of the currently pending application claims are supported by the specification and drawings. In particular the cutting means of claims 6-8 and 51 are shown in the drawings. Page 20, lines 1-10 of the specification describes the features of Figure 4A which is called a "SMA cutting device". The cutting device disclosed in Figure 4A is at least one cutting means of claims 6-8 and 51 that is disclosed in the specification and which is clearly disclosed in Figure 4A. Therefore, the examiner's objection to the drawings for failure to disclose a cutting means is without merit.

New claim 65 is directed to annulus comprised of a solid ring. The feature is similar to the claim 2 feature the examiner claims is missing from the drawings. Once again, the examiner is directed to Figure 4A which shows an SMA cutting device. The SMA cutting device includes "a series of windings of (stretched) SMA wire (24) ....". The stretched wire is disclosed in the specification as, in the alternative, being a solid annulus "collar formed from SMA". Therefore, one skilled in the art at the time of the invention would understand that feature 24 of Figure 4A could be a series of windings or in the alternative it could be a solid annulus or collar. Therefore, the drawings and specification disclose an annulus comprised of a solid ring.

The examiner next objects to the drawings for failing to disclose a heater. One skilled in the art at the time of the invention would clearly understand how to associate a heater with the casing – either internally or externally – to heat the shape memory alloy to a predetermined temperature. In other words, it is not necessary to depict a heater in the figures in order for a person skilled in the art to practice the claimed invention and the examiner respectfully asked to withdraw his objections to claim 52 on this grounds.

#### **IV. THE CLAIM OBJECTIONS**

The examiner objected to the claims for including several informalities. The examiner's objection to claim 11 is moot as that claim is cancelled from the application.

The examiner's objection to claims 2, 4-8, 11-12, 17, 37 and 50-62 are overcome by either cancelling the claim from the application or by amending the claim preamble to begin with the word "The" rather than the word "A".

#### **V. THE EXAMINER'S CLAIM INTERPRETATION**

The examiner indicated that patentable weight was not given to certain terms of claim 1 because the terms are directed to the manner of making the device rather than to an aspect of the apparatus. The claim 1 limitations ignored by the examiner are directed to properties of the claimed apparatus and must be considered in assessing the patentability of the invention.

Claim 1 is amended above to more clearly recite the "memory" aspect of the shaped memory alloy. In particular, claim 1 now recites the shaped memory alloy as "an alloy that has been subjected to a combination of mechanical and thermal treatments" so as to impart a memory.

The examiner first suggests that the claim 1 phrase "which has been subject to a combination of mechanical and thermal treatments" has no patentable weight. However, in order for the invention to operate, the shape memory alloy must have its "memory" imparted prior to being located around the munitions. In other words, the term "shape memory alloy" refers to a shape memory alloy whether or not it has been "subject to a combination of mechanical and thermal treatments" that give it its memory. Claim 1 is directed to a subset of a shape memory alloy, *i.e.*, a shape memory alloy that has been subjected to thermal treatments that give it a

“memory”. Therefore, the phrase “which has been subjected to a combination of mechanical and thermal treatments” clearly defines a property or a condition of the alloy used in the claimed invention – the alloy has been imparted with a memory. For at least this reason, the term “which has been subjected to in combination of mechanical and thermal treatments” of claim 1 must be given patentable weight.

The examiner next indicates that the claim 1 phrase, upon subsequent heating to a predetermined temperature, said annulus will contract radially inwards and rupture the said munitions casing” was not given patentable weight since it is directed to an intended use of the apparatus. Once again, the examiner must give the phrase patentable weight because the phrase is directed to a property of the shaped memory alloy. The portion of claim 1 prior to the ignored language is directed to a shape memory alloy that merely requires the annulus to exhibit a “shape memory effect” upon heating. The improperly ignored phrase, requires the relative thickness of the annulus, casing and a respective arrangements and the extent of shape memory be such that the combination causes a casing rupture to occur when the alloy is heated above to predetermined temperature. The ignored phrase is a technical effect or property of the shape memory alloy and the examiner must give the phrase patentable weight.

The examiner objected to claim 4 and gave it no patentable weight. Claim 4 has been cancelled from the application and replaced with new claim 63. The examiner must give claim 63 patentable weight because it is directed to a property of the shaped memory alloy.

## **VI. THE ANTICIPATION REJECTION**

The examiner rejected claims 1, 4-5, 11-12, 37, 52-54 and 56-61 for being anticipated by St. Amand (USP 6,019,025). The ‘025 patent is directed to a retractable seal where a shape memory alloy annulus is used to reposition the seal. Thus, both inventions have a common annulus with a memory effect. However, that is the only similarity between the ‘025 device and the claimed invention.

The claimed invention is directed towards a rupture shape memory alloy annulus, *i.e.*, an annulus that upon activation will move radially inwards and cause rupturing of a munitions casing. In contrast, the annulus of the ‘025 operates only on a flexible o-ring seal and has no interaction with a munitions casing. Thus, the ‘025 patent does not disclose a shape memory

alloy having a “memory [that] causes said annulus to contract radially inwardly and rupture the said munitions casing.” For at least this reason, all pending claims are novel over the ‘025 patent.

## **VII. THE OBVIOUSNESS REJECTION**

The examiner rejected claims 2 and 15 for being unpatentable for obviousness over the ‘025 patent.

The examiner’s rejection of claim 2 for obviousness is moot as claim 2 has been cancelled from the application above.

Claim 15 is nonobvious over the ‘025 patent for at least two reasons. Firstly, the ‘025 patent does not disclose all of the features of claim 1 as set forth in Section VI above. Therefore, claim 15 is patentable by virtue of its dependency upon patentable claim 1. Secondly, the use of a plurality of windings to replace a solid annulus is not obvious. It is the examiner’s position that a plurality of windings is a “mere duplication of parts”. That is not the case. A plurality of windings are not a plurality of annuli. For this reason as well, claim 15 is nonobvious over the ‘025 patent.

## **CONCLUSION**

Pending application claims 1, 5-8, 12, 37 and 50-55 are believed to be novel, nonobvious and patentable for the reasons set forth above. Favorable reconsideration and allowance of all pending application claims is, therefore, courteously solicited.

Respectfully submitted,

Date: November 12, 2007

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# **Appendix A**

**(IDS Submitted by Applicant On May 4, 2005)**



JC07 Rec'd PCT/PTO 0 4 MAY 2005 #3

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
(Case No. 05-081)

In the Application of:

Cook et al.

Serial No.: 10/522,490

Filed: January 26, 2005

Title: Temperature Responsive Safety Devices  
For Munitions

Art Unit: Unknown

Examiner: Not Assigned

TRANSMITTAL LETTER

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In regard to the above identified application:

1. We are transmitting herewith the attached:
  - a. Information Disclosure Statement
  - b. Form PTO-1449
  - c. Copy of non-U.S. patent references
  - d. Return Receipt Postcard
2. With respect to additional fees:
  - a. Attached is a check in the amount of \$-0-
3. Please charge any additional fees or credit overpayment to Deposit Account No.13-2490. A duplicate copy of this sheet is enclosed.
4. CERTIFICATE OF MAILING UNDER 37 CFR § 1.8: The undersigned hereby certifies that this Transmittal Letter and the paper, as described in paragraph 1 hereinabove, are being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22313-1450 on this 29th day of April, 2005.

By: C. B. Hughes  
A. Blair Hughes  
Reg. No. 32,901

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43.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
(Case No. 05-081)

In the Application of: )  
Cook et al. )  
Serial No.: 10/522,490 ) Art Unit: Unknown  
Filed: January 26, 2005 ) Examiner: Not Assigned  
Title: Temperature Responsive Safety Devices )  
For Munitions )

**INFORMATION DISCLOSURE STATEMENT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

Pursuant to 37 C.F.R. Section 1.97-1.98, applicants wish to make the following references of record in the above-identified application. These references may be material to the Examiner's consideration of the presently pending claims. Copies of the references cited below are enclosed along with a completed Form-1449.

**U.S. Patents**

<u>Patent No.</u>	<u>Inventor</u>	<u>Publication Date</u>
1. 4,035,007	Harrison et al.	July 12, 1977
2. 5,060,470	Vannname	October 29, 1991
3. 6,321,656	Johnson	November 27, 2001
4. 6,450,725	Roth et al.	September 17, 2002

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### **Foreign Patents**

	<u>Patent No.</u>	<u>Inventor</u>	<u>Publication Date</u>
1.	FR 2 686 410	Berton et al.	July 23, 1993
2.	FR 2 742 221	Mulleman	December 12, 1995
3.	EP 0 738 869	Lolive	October 23, 1996
4.	EP 0 334 731	Mulleman	September 27, 1989
5.	EP 0 310 369	Brown	April 4, 1989
6.	EP 0 004 696	Flaherty et al.	October 17, 1979
7.	WO 02/03019	Prytz	January 10, 2002
8.	WO 90/12237	Borden et al.	October 18, 1990
9.	JP 05322074 (Abstract)	Shibata	December 7, 1993
10.	JP 05099377 (Abstract)	Shibata	April 20, 1993
11.	JP 2000-106060	Takashi	April 11, 2000
12.	JP 8-189510	Mizuho	July 23, 1996
13.	DE 3007307	Melton et al.	July 23, 1981
14.	GB 2 352 768	Schlosser et al.	February 7, 2001

### **Other Documents**

1. Search Report from the UK Patent Office for Application Number GB 0218598.1
2. International Search Report from the European Patent Office for Application Number PCT/GB03/03398

### Summary of the Relevancy of Foreign Language References

FR 2 686 410 – this reference was cited in the Search Report issued by the European Patent Office in the corresponding PCT patent application. The International Search Report identifies the document as an “X” document with respect to claims 18-21, 47 and 48– a document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is taken alone. The International Search Report also identifies the document as an “Y” document with respect to claims 1-10, 17, 19-22 and 33-46 – a document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document combined with one or more other such documents, such combination being obvious to a person skilled in the art.

FR 2 742 221 - this reference was cited in the Search Report issued by the British Patent Office in the corresponding British patent application. The British Search Report identifies the document as an “X” document – a document indicating lack of novelty or inventive step. The Search Report indicates that the Figure 1 and WPI abstract (1997-335500) as being particularly relevant to claims 1-2, 7-8, 10-11, 13 and 15-32.

EP 0 334 731 - this reference was cited in the Search Report issued by the British Patent Office in the corresponding British patent application. The British Search Report identifies the document as an “X” document – a document indicating lack of novelty or inventive step. The Search Report indicates that the Figure 1 and WPI abstract (1989-280046) as being particularly relevant to claims 1-3, 7-8, 10-13 and 15-32.

EP 0 738 869 - this reference was cited in the Search Report issued by the European Patent Office in the corresponding PCT patent application. The International Search Report identifies the document as an “X” document with respect to claims 47 and 48– a document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is taken alone. The International Search Report also

identifies the document as an "Y" document with respect to claims 1-10, and 17 – a document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document combined with one or more other such documents, such combination being obvious to a person skilled in the art.

JP 2000-106060 - this reference was cited in the Search Report issued by the British Patent Office in the corresponding British patent application. The British Search Report identifies the document as an "X" document – a document indicating lack of novelty or inventive step. The Search Report indicates that the Figures 1-5 and WPI abstract (2000-335046) as being particularly relevant to claims 1-3, 7-8, 10, 11, and 15-32.

JP 08-189510 - this reference was cited in the Search Report issued by the British Patent Office in the corresponding British patent application. The British Search Report identifies the document as an "X" document – a document indicating lack of novelty or inventive step. The Search Report indicates that the Figures 1 and 2 and WPI abstract (1906-389423) as being particularly relevant to claims 1-5, 7-8, 10-13 and 15-32.

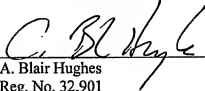
DE 3007307 - this reference was cited in the Search Report issued by the British Patent Office in the corresponding British patent application. The British Search Report identifies the document as an "X" document – a document indicating lack of novelty or inventive step. The Search Report indicates that the Figures 1-5 and WPI abstract (1981-55374) as being particularly relevant to claims 1-3, 7-8, 13 and 15-32.

Respectfully submitted,

McDONNELL BOEHNEN HULBERT &  
BERGHOFF LLP

Dated: April 29, 2005

By:



A. Blair Hughes

Reg. No. 32,901

FORM PTO-1449  
(Rev. 2-32)

MAY 04 2005

U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

05-081

Serial No.

10/522,490

**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use several sheets if necessary)

**Applicant:**

Cook et al.

**Filing Date:**

1/26/05

**Group:**

Unknown

**U.S. PATENT DOCUMENTS**

Examiner Initial	Document Number	Date	Name	Class	Subclass	Filing Date if Appropriate
	4,035,007	7/12/77	Harrison et al.			
	5,060,470	10/29/91	Vannan			
	6,321,656	11/27/01	Johnson			
	6,450,725	9/17/02	Roth et al.			

**FOREIGN PATENT DOCUMENTS**

	Document Number	Date	Country	Class	Subclass	Translation	
						Yes	No
	FR 2 686 410	7/23/93	FR				X
	FR 2 742 221	12/12/95	FR				X
	EP 0 738 869	10/23/96	EP				X
	EP 0 334 731	9/27/89	EP				X
	EP 0 310 369	4/4/89	EP				
	EP 0 004 696	10/17/97	EP				
	WO 02/03019	1/10/02	PCT				
	WO 90/12237	10/18/90	PCT				

EXAMINER

DATE CONSIDERED

EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication.

FORM PTO-1449  
(Rev. 2-32)

U.S. Department of Commerce  
Patent and Trademark Office

Atty. Docket No.

05-081

Serial No.

10/522,490



**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

(Use several sheets if necessary)

**Applicant:**

Cook et al.

**Filing Date:**  
1/26/05

**Group:**  
Unknown

**FOREIGN PATENT DOCUMENTS**

	Document Number	Date	Country	Class	Subclass	Translation	
						Yes	No
	JP 05322074 - Abstract	12/7/93	JP				
	JP 05099377 - Abstract	4/20/93	JP				
	JP 2000-106060	4/11/00	JP				X
	JP 08-189510	7/23/96	JP				X
	DE 3007307	7/23/81	DE				X
	GB 2 352 768	2/7/01	GB				

**OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc).**

	Search Report from the UK Patent Office for Application Number GB 0218598.1
	International Search Report from the European Patent Office for Application Number PCT/GB03/03398

EXAMINER

DATE CONSIDERED

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